

**AMENDMENTS TO THE CLAIMS**

Please make the following amendments to the claims:

1-28. (Cancelled)

29. (New) An system for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

a DMT transmitter configured to generate a plurality of transmit carrier tones and apply a gain to each transmit carrier tone and combine the plurality of transmit carrier tones into a symbol and transmit the symbol; and

a DMT receiver comprising:

a receive line driver configured to receive the output of the DMT transmitter and to detect the transmitted symbol;

a discrete Fourier transform (DFT) element configured to separate the detected symbol into a plurality of received carrier tones; and

a gain calculation element configured to calculate at least a portion of the gain applied by the DMT transmitter to each of the plurality of transmit carrier tones, the gain based on a predefined transmit signal spectrum associated with each of the plurality of transmit carrier tones and on a power measurement of each of the received carrier tones.

30. (New) The system of claim 29, where the DMT transmitter is further configured to produce a local transmit signal carrying the symbol and the receive line driver is further configured to receive the local transmit signal and to detect the transmitted symbol carried on the local transmit symbol.

31. (New) The system of claim 29, wherein the gain adjustment element further comprises:
- logic configured to measure power on each of the plurality of received carrier tones; and
- logic configured to provide a local gain scalar for each of the plurality of transmit DMT carrier tones.
32. (New) The system of claim 31, wherein the DMT transmitter is further configured to apply the local gain scalar to each transmit carrier tone in addition to a remote gain scalar provided by a remote modem.
33. (New) The system of claim 31, wherein the DMT transmitter is further configured to apply the local gain scalar to each transmit carrier tone after applying a remote gain scalar provided by a remote modem.
34. (New) The system of claim 31, wherein gain calculation element is further configured to use a remote transmit signal spectrum from a remote modem as the predefined signal spectrum.
35. (New) The system of claim 29, wherein the receive line driver monitors local line conditions.
36. (New) The system of claim 29, wherein the symbol is generated before a start-up sequence.
37. (New) The system of claim 29, wherein the symbol is generated after a start-up sequence.

38. (New) An system for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

a DMT receiver; and

a DMT transmitter configured to generate a plurality of transmit carrier tones and combine the plurality of transmit carrier tones into a symbol and transmit the symbol,

wherein the DMT receiver is configured to detect the transmitted symbol at the output of the DMT transmitter and to separate the detected symbol into a plurality of received carrier tones and to supply a plurality of carrier tone scaling signals to the transmitter,

wherein the DMT transmitter is further configured to apply a gain to each transmit carrier tone before transmitting, the gain applied to each tone based on a corresponding one of the plurality of carrier tone scaling signals.

39. (New) The system of claim 38, wherein the DMT receiver is further configured to measure power on each of the plurality of received carrier tones and to produce each of the plurality of carrier tone scaling signals based on the measured power on the corresponding received carrier tone.

40. (New) The system of claim 38, wherein the DMT transmitter is further configured to apply the local gain scalar to each transmit carrier tone in addition to a remote gain scalar provided by a remote modem.

41. (New) The system of claim 38, wherein the DMT transmitter is further configured to apply the local gain scalar to each transmit carrier tone after applying a remote gain scalar provided by a remote modem.

42. (New) The system of claim 38, wherein the receive line driver monitors local line conditions.

43. (New) A method for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

applying a local gain to each of a plurality of transmit carrier tones, the plurality of transmit carrier tones forming a symbol;  
producing a local transmit signal carrying the symbol;  
detecting the symbol carried on the local transmit signal;  
separating the detected symbol into a plurality of received carrier tones; and  
calculating at least a portion of the local gain, the calculated gain based on a predefined transmit signal spectrum associated with each of the plurality of transmit carrier tones and on a power measurement of each of the received carrier tones.

44. (New) The method of claim 43, further comprising:  
receiving the predefined transmit signal spectrum from a remote modem.

45. (New) The method of claim 43, further comprising  
measuring power on each of the plurality of received carrier tones;  
calculating a local gain scalar for each of the plurality of transmit DMT carrier tones; and  
applying a local gain to each of a plurality of transmit carrier tones using a corresponding one of the local gain scalars.

46. (New) A method for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

applying a local gain to at least one of a plurality of transmit carrier tones, the plurality of transmit carrier tones forming a symbol;  
producing a local transmit signal carrying the symbol;  
detecting the symbol carried on the local transmit signal;  
separating the detected symbol into a plurality of received carrier tones; and  
adjusting the local gain applied to the at least one transmit carrier tone, the calculated gain based on a predefined transmit signal spectrum associated with each of the plurality of transmit carrier tones and on a power measurement of each of the received carrier tones.

47. (New) The method of claim 46, further comprising:  
calculating a received power level for each of the received carrier tones;  
comparing the received power level of each received carrier tone with a predetermined power level; and  
adjusting the local gain applied to the at least one transmit carrier tone to match the predetermined power level.

48. (New) The method of claim 47, further comprising:  
adjusting the local gain applied to the at least one transmit carrier tone, using gain scalars, to match the predetermined power level.

49. (New) The method of claim 46, further comprising:  
monitoring a communication channel to detect impedance variations,  
wherein the adjusting step is responsive to the impedance variations.

50. (New) An system for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

means for applying a local gain to each of a plurality of transmit carrier tones, the plurality of transmit carrier tones forming a symbol;

means for producing a local transmit signal carrying the symbol;

means for detecting the symbol carried on the local transmit signal;

means for separating the detected symbol into a plurality of received carrier tones; and

means for calculating at least a portion of the local gain, the calculated gain based on a predefined transmit signal spectrum associated with each of the plurality of transmit carrier tones and on a power measurement of each of the received carrier tones.

51. (New) The system of claim 50, further comprising:

means for receiving the predefined transmit signal spectrum from a remote modem.

52. (New) The system of claim 50, further comprising:

means for measuring power on each of the plurality of received carrier tones;

means for calculating a local gain scalar for each of the plurality of transmit DMT carrier tones; and

means for applying a local gain to each of a plurality of transmit carrier tones using a corresponding one of the local gain scalars.

53. (New) The system of claim 50, wherein the symbol is generated before a start-up sequence.

54. (New) The system of claim 50, wherein the symbol is generated after a start-up sequence.

55. (New) The system of claim 50, further comprising means for monitoring local line conditions.